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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	09/072,959	
	Filing Date	May 5, 1998	
	First Named Inventor	Pai-Hung Pan	
	Art Unit	2823	
	Examiner Name	G. Fourson III	
Total Number of Pages in This Submission	6	Attorney Docket Number	2269-2919.4US (96-0499.01/US)

ENCLOSURES (check all that apply)

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PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:

Pai-Hung Pan

Serial No.: 09/072,959

Filed: May 5, 1998

For: TECHNIQUE FOR FORMING
SHALLOW TRENCH ISOLATION
STRUCTURE WITHOUT CORNER
EXPOSURE AND RESULTING
STRUCTURE

Confirmation No.: 7136

Examiner: G. Fourson III

Group Art Unit: 2823

Attorney Docket No.: 2269-2919.4US

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REPLY BRIEF

Mail Stop Appeal Brief – Patents
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Attn: Board of Patent Appeals and Interferences

Sir:

This REPLY BRIEF is being filed pursuant to the requirements of 37 C.F.R. § 41.41.

VII. ARGUMENT

All of the rejections of claims 1-5, 11-17, 25-28, and 33-38 of the above-referenced application are based upon an assertion that one of ordinary skill in the art would have been motivated to combine teachings from U.S. Patent 5,712,185 to Tsai et al. (hereinafter "Tsai") and U.S. Patent 4,835,584 to Lancaster et al. (hereinafter "Lancaster"). Specifically, it has been asserted that one of ordinary skill in the art would have been motivated to apply an oxide layer to the exposed surfaces of a trench formed in a semiconductor substrate before removing a nitride layer from above the semiconductor substrate.

Tsai, which includes teachings that pertain to the fabrication of isolation structures, as are the methods recited in the claims of the above-referenced application, explains that an oxide layer may be formed over the surfaces of a trench to repair damage that occurs during descuming, which is known by those of ordinary skill in the art to remove material at a very slow, controlled rate. Such repair is not effected until *after* the descuming process, and need not be performed until then since the descuming process is controlled in such a way that most of the silicon nitride remains in place thereafter. As Tsai does not teach or suggest that an oxide layer may be formed prior to the descuming process, the Examiner was forced to locate a reference that teaches that an exposed surface of a semiconductor substrate may be coated with an oxide prior to removing silicon nitride.

Unfortunately, the best art that the Examiner could locate was Lancaster, which does not pertain at all to the fabrication of isolation structures. Instead, the teachings of Lancaster relate to processes for fabricating transistor gates. While Lancaster does teach that surfaces of a trench may be coated with an oxide, and that silicon nitride may be subsequently removed, Lancaster

teaches that the silicon oxide layer is necessary to prevent etching of the trench surfaces during the complete, aggressive removal of the silicon nitride layer.

The fact that Lancaster would have available to the named inventors of Tsai but did not cause them to so much as mention the possibility that a thermal oxide could be formed on the surfaces of an isolation trench before the descuming process indicates that one of ordinary skill in the art would have seen no reason to protect the surfaces of the isolation trench from the descuming process. Further, the availability of Lancaster to the inventors of Tsai indicates that the Examiner's reliance upon the teachings of Lancaster is merely classic, improper hindsight reconstruction.

In view of the foregoing, as well as for the other reasons that have been set forth in the APPEAL BRIEF that has been filed in the above-referenced application, it is apparent that one of ordinary skill wouldn't have been motivated to combine teachings from Tsai and Lancaster in the asserted manner and, thus, that these references do not provide any teachings or suggestions upon which a *prima facie* case of obviousness could be based.

Accordingly, reversal of the 35 U.S.C. § 103(a) rejections of claims 1-5, 11-17, 25-28, and 33-38 is respectfully requested, as is the allowance of each of these claims.

XI. CONCLUSION

It is respectfully submitted that:


(A) Claims 1-4, 11-14, 16, 25-27, 33-35, and 37 are allowable under 35 U.S.C. § 103(a) for reciting subject matter which is nonobvious and, thus, patentable over the subject matter taught in Tsai, in view of teachings from Lancaster;

(B) Under 35 U.S.C. § 103(a), the subject matter to which claims 17 and 38 are directed is nonobvious and, thus, patentable over the subject matter taught in Tsai, in view of the teachings of Lancaster and, further, in view of the Examiner's Comment; and

(C) Claims 5, 15, 28, and 36 are allowable under 35 U.S.C. § 103(a) for being drawn to subject matter that is nonobvious and, thus, patentable over teachings from Tsai, in view of teachings from Lancaster and, further, in view of the teachings of Lee.

Therefore, it is respectfully requested that the final rejections of claims 1-5, 11-17, 25-28, and 33-38 be withdrawn and that each of these claims be allowed.

Respectfully submitted,



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